

**AV6000/654
AV5000**

OWNER'S MANUAL

Multi-Channel A/V Amplifiers

B & K Components Ltd.



CAUTION:
RISK OF ELECTRIC SHOCK
DO NOT OPEN



ATTENTION: RISQUE DE CHOC ELECTRIQUE
NE PAS OUVRIR

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT
EXPOSE THIS UNIT TO RAIN OR MOISTURE.

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"Repeatability" - your assurance of a product reliability

In days gone by, the term "created carefully by skilled craftsmen" exemplified the meaning behind 'quality assurance'. In the modern manufacturing environment, those same skilled craftsmen now design the processes that allow the economies of volume manufacturing, while still retaining the same high standards of quality.

"Repeatability" is the B & K house term for a quality assurance philosophy that is the culmination of several well engineered manufacturing processes. The four most important of these are: (a.) a manufacturing process that functions in exactly the same manner with each and every audio component, (b.) a comprehensive test of each and every component part prior to installation in the circuit board, (c.) final assembly by an experienced assembler, and (d.) a comprehensive, functional test prior to final packaging.

As a first step towards manufacturing a 'repeatable' component, B & K employs the use of the latest technology in automatic insertion equipment at their manufacturing facility in Buffalo, New York. Not only does this process provide a complete and exact duplication of each and every circuit board, it imposes a full test of each individual component just prior to insertion in the circuit board. Should any component fail, the process is halted automatically. It can only be resumed when the faulty component is replaced with a serviceable unit which, itself, must undergo the same testing procedure before the process can resume.

All assembly is done by technicians who are trained in the art of doing the job right the first time. Following assembly, the unit is tested rigorously for specification and reliability. Only then is the unit packaged for shipment.

Our Pledge to You

We know the decision to purchase an audio component is not one taken lightly. It can take considerable time and trial to find the right component for your system. At B & K, our reputation is based on taking the quality and consistency of our products and the needs of our customers very seriously. Therefore, when you make an investment in a B & K audio product, we feel sure your satisfaction with its musical consistency and solid operational reliability will increase with each passing day.

Should you ever have a question about, or a problem with, any B & K product, we are but a phone or FAX call away. Thank you for choosing a B & K audio product. You will not be disappointed.

Happy listening,



B & K Components Ltd.

INTRODUCTION

Note: This manual describes the AV6000 and AV654 amplifiers -- the AV5000 has similar features and is described in this manual only where differences exist.

Exciting and reliable sources of high fidelity, audio signal amplification, the 6 channel AV6000 and AV654 amplifiers, and 5 channel AV5000 amplifier, offer excellent versatility and cost effectiveness for most multi-channel, home entertainment systems.

The AV6000/654 is primarily a 6 channel amplifier capable of delivering a clean, fully musical, 100/60 watts r.m.s. per channel into an 8 Ω load. As well, the amplifier offers a 'bridging' feature which allows those 6 channels to be combined into 3 more powerful channels. The 5 channel AV5000 (3 channels: 100 watts r.m.s., 2 channels: 60 watts r.m.s. into 8 Ω) also has bridging capability for combining 4 channels to 2 more powerful channels. These bridging capabilities present an opportunity to use the amplifiers in a number of configurations for a variety of uses: the standard 6 channel mode, or a 5, 4 or 3 channel mode (AV6000/654); and the standard 5 channel mode, or a 4 or 3 channel mode (AV5000). Such versatility makes these amplifiers particularly compact sources for a multiplicity of surround sound or multi-room applications.

While the B & K Components Ltd. AV multi-channel amplifiers are engineered to interact harmoniously with all popular sources and line stages, the match that approaches perfection is that of being driven by any one of the excellent B & K preamplifiers presently available.

DESIGN AND CONSTRUCTION

The AV6000/654 utilizes high quality electronic circuitry to achieve an environment wherein a detailed, transparent and highly musical sound can be realized. The high quality parts complement includes state-of-the-art solid state devices: 1% metal film resistors, computer grade electrolytic power supply capacitors and a high capacity toroid transformer.

The amplifier operates class AB employing high current MOSFET power output stages. As such it is capable of reproducing the most demanding digital or analog recordings at full rated power levels.

SETTING UP

Placement of the AV6000/654 is important and requires some pre-planning. In order to eliminate interference being induced in the amplifier by other components, it must be physically located a safe distance away from all source components. This will avoid their being influenced by the fields being propagated by the amplifier when it is under heavy load.

Ideally, the amplifier will be located near the speakers. This will minimize the adverse effects of inductance, capacitance and any damping effect that might result from speaker wires interacting with the amplifier.

The amplifier is equipped with raised feet so that continuous ventilation can be maintained. As well, they help to maintain acoustic feedback into the amplifier at a minimum. They also provide a measure of protection against scratching any surface the unit might be resting on.

Note: Acoustic feedback can be identified as low frequency vibrations which are not part of the signal from the source material. They also have a tendency to become louder and less controllable as you increase the system volume. The most common source of acoustic feedback interference is the result of having the preamplifier and source components too close to the loudspeakers.

SAFETY & CARE CONSIDERATIONS

CONNECTING AND DISCONNECTING CABLES

In order to eliminate potential damage to the speakers and other components in the system, always turn off the amplifier before unplugging or plugging in the preamplifier's power cord. This caution is also applied to plugging in or unplugging the interconnect cables running from the preamplifier to the amplifier.

When plugging in or unplugging interconnect cables running from source to preamplifier, always turn down the preamplifier's volume control to **minimum** and if available **mute** the preamplifier first.

POWER LINE MODULATION INTERFERENCE

During heavy passages, the power needs of the amplifier may fluctuate considerably. As these needs are felt at the power source, the line voltage available will in turn fluctuate, based on the instantaneous power requirement of the amplifier. It is an effect somewhat like one person trying to hold on to the end of a rope while another person at the other end is jerking it at random intervals. Therefore, we recommend that you:

AVOID CONNECTING THE PREAMPLIFIER OR THE SOURCE COMPONENTS TO THE SAME POWER SOURCE AS THE AMPLIFIER.

To do so may subject the preamplifier and its sources to power line modulation interference which could affect the operation of the component, thereby resulting in a degraded audio signal from the source.

THE INPUTS AND OUTPUTS

Located on the rear panel, they are:

INPUTS

There are 6 input signal connections to the AV6000/AV654 amplifier through high quality, gold-plated connectors. They accommodate audio cables utilizing standard RCA plugs [See Fig. 1(a)].

OUTPUTS

There are 6 sets of high quality, 5-way binding posts; one set for each channel. They are designed to accept a banana-type plug or a spade lug connector [see Fig. 1(b) & (c)].

Fig 1.



(a) Typical RCA plug



(b) Spade lug



(c) Double banana plug

DO NOT REMOVE CABINET FEET. KEEP AMPLIFIER WELL VENTILATED AT ALL TIMES.

SYSTEM INSTALLATION

CONSIDERATIONS

There will most likely be a number of cables involved in the installation of your home entertainment system. Therefore, pre-planning is essential in order to maximize system efficiency. We recommend the following as a means of helping you reach that goal.

- Use the diagram on page 8 of this manual, or make your own diagram of your proposed system, to lay out the location of components, the amplifier and the proposed cable runs between them in the room. Number each cable and record its length on the drawing for future reference.

For example, " #3 - IN - 12' " denotes input cable from source channel # 3 and that it is 12 feet long.

" #1 OUT (L. REAR) - 20' " denotes that #1 speaker output has been assigned to the left rear speaker and that its length is 20 feet.

- Cable runs are critical in that they must be kept away from sources of power radiation (amplifiers, power cords, heaters etc.). For the sake of safety, they should also be kept out of traffic areas.
- The process of optimizing the system will include the type of cable, the length of run and the obstructions it must deal with along its run. Your dealer can advise you on the products available and their relative merits. If building custom-length audio cables is not your strength, your dealer should be able to help you with that as well.

If you would like to utilize the bridging option which converts two channels in order to create a more powerful single channel, see the ALTERNATE SYSTEM CONFIGURATIONS section.

For the standard configuration of one channel source per input, most of the planning will be in determining which input you wish to apply to which channel. A typical connection diagram is shown in Fig. 3(a). For other methods of setting up your system, see the section ALTERNATE SYSTEM CONFIGURATIONS.

MAKING THE CONNECTION

1. Before doing anything, ensure that the power switch on the amplifier's front panel is in the 'off' position. Again, it is recommended that you locate a separate AC power outlet for the amplifier, one that is **not** shared by any other audio component in the system. This will eliminate the possibility of the amplifier 'modulating' the power being supplied to the component and compromising the signal originating from that component.
2. Locate the AC power supply cord and plug it into the power input receptacle in the rear panel. Do not connect it to the AC power supply as yet.
3. Connect the audio cables from your preamplifier's output to the selected channel's input connectors. Make note of the input number (as suggested in the "Considerations" section above) so that the correct speaker cable can be connected to the speaker output with the same number. A rear panel connection guide is shown in Fig. 2(a).
4. Connect the cables from your speakers to the appropriate CHANNEL output.

MAKING THE CONNECTION (contd.)

5. Double-check the cable connections (both ends) to ensure they are plugged into the correct jacks for the source (L or R - front, rear or side) and that the connection is tight.
6. With the volume (gain) control on your preamplifier set to full minimum, or switched to 'mute', plug the amplifier's power cord into the AC power source. Turn the amplifier's power switch 'on'. The panel light above the switch should be illuminated.
7. Place all level controls on the amplifier at maximum.

SETUP AND CHECKOUT

The next task will require that you listen to a source sampling (tape, CD etc.), noting the levels at each point within the system. During the initial listening situation, you may find the dispersion of sound to be unbalanced. This could be the result of where you are in relation to the speakers. It could also be the room acoustics or the manner in which the signal is being distributed in the stages prior to the amplifier. The amplifier provides you with level controls for each channel so you can adjust the relative volume of each channel to suit your personal taste.

While initial audio quality will be very good, it should get even better. Most high performance, audio amplifiers require about 40 hours of circuit forming ('burn-in') time before maximum fidelity will be fully realized.

Helpful Hint: Some audiophiles prefer to inaugurate the system as a unit (preamplifier, cables and amplifier). If this is your preference, you might try playing a CD into the system for about 24 hours straight (speakers connected), at a low but listenable volume level, as one method of 'forming' the components and signal pathways.

Should you encounter any inconsistencies that cannot be traced to the source or the material being played, consult the IN CASE OF DIFFICULTY section in this manual.

ALTERNATE SYSTEM CONFIGURATIONS

CHANNEL BRIDGING

Channels 1 & 2, 3 & 4 and 5 & 6 of the AV6000/654 are available for bridging in order to provide 3 channels capable of providing 200/120 watts r.m.s. into an 8 Ω load. Similarly, channels 1 & 2 and 4 & 5 of the AV5000 are available for bridging to provide 2 channels capable of providing 200 and 120 watts r.m.s. into an 8 Ω load respectively.

Due to the relative complexity of the modification, it is recommended that this conversion be carried out by your dealer's technician or at the B & K factory in order to comply with warranty requirements. For more information on bridging the amplifier, please contact your dealer or B & K directly.

BIWIRING

Biwiring has the potential of doing away with much of the 'mud' associated with processing all incoming frequencies at one input on the crossover network. As a result, most frequencies, especially the bass, will appear tighter and more resilient. The mid range and the highs will be clearer. How effectively this is accomplished will vary from one speaker design to another.

ALTERNATE SYSTEM CONFIGURATIONS (contd.)

BIWIRING AT THE AMPLIFIER

Biwiring consists of the simple act of running two sets of speaker cables from the designated channel's speaker output to each speaker and, observing correct polarity, connecting one set to the "HI" terminal and the other to the "LO" terminal.

A speaker with a 'biwire' option provides two inputs on the rear panel of each speaker enclosure, or internally on the speaker's crossover circuit board. There is usually one input for "HI" frequencies, and one for the "LO" frequencies. For normal operation, these inputs will likely be bridged with some type of jumper configuration. Usually, it is a matter of removing these jumpers to allow biwiring. [See Fig. 3(a)]

The instruction manual enclosed with the speaker will usually guide you through the connection process.

AVOID SPEAKER/AMPLIFIER DAMAGE

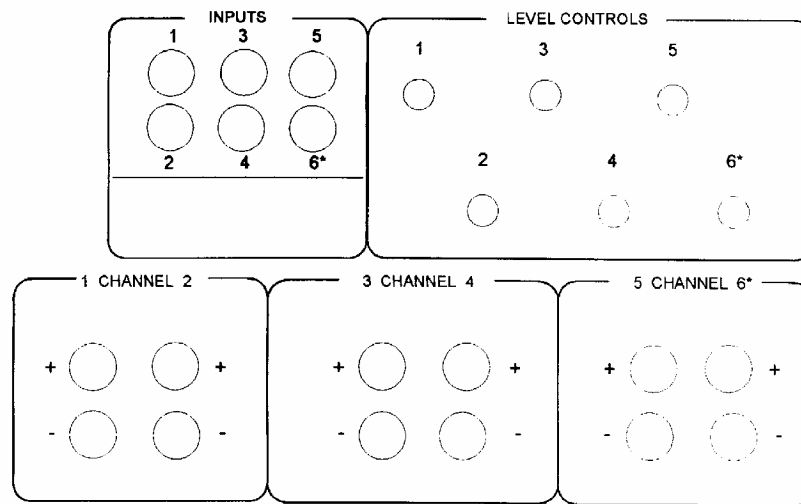
1. OBSERVANCE OF POLARITY IS ESSENTIAL. DOUBLE-CHECK CONNECTIONS BEFORE TURNING THE AMPLIFIER ON. THE AMPLIFIER CAN BE DAMAGED IF POLARITIES ARE INCORRECT.
 2. DAMAGE CAN OCCUR TO YOUR SPEAKERS IF THE POWER RATING OF EACH INDIVIDUAL DRIVER IS EXCEEDED BY THE AMPLIFIER.
- ENSURE THAT ALL THE DRIVERS IN YOUR SPEAKER SYSTEM ARE CAPABLE OF HANDLING NOT ONLY THE POWER BEING DELIVERED BY THE AMPLIFIER(S), BUT THE ENERGY THAT IS LIKELY TO BE GENERATED DURING STRONG PASSAGES.

IN CASE OF DIFFICULTY

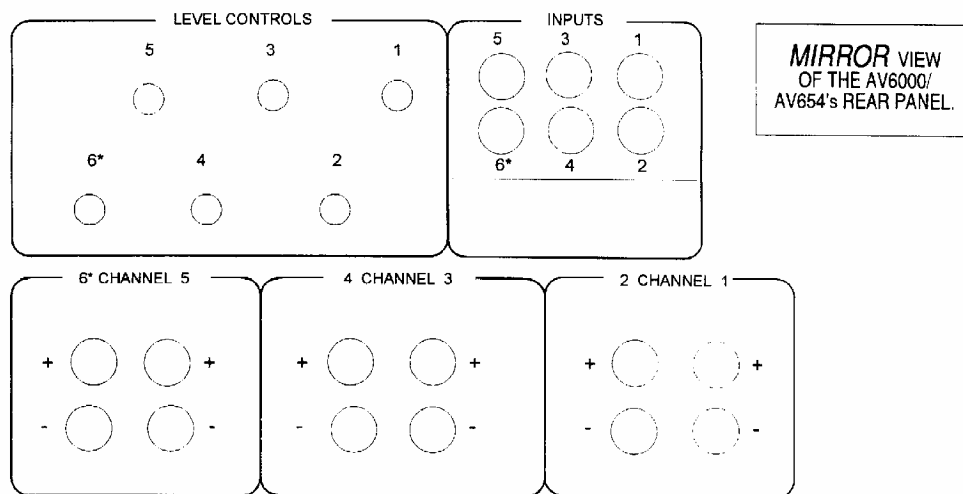
PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
No sound ('ON' LED not illuminated)	<ul style="list-style-type: none">- Power cord not plugged in- Power off at AC source- Internal fuse blown or faulty	<ul style="list-style-type: none">- Reconnect power cord- Check AC source (switch, fuse etc.)- Check for shorts or overloading*
No sound on some or all selected channels	<ul style="list-style-type: none">- speaker leads loose or faulty- Line stage-to-amplifier cables loose or faulty- Source-to-line stage cables loose or faulty- Line stage or source not correctly selected	<ul style="list-style-type: none">- Tighten, repair or replace cable- Tighten, repair or replace cable- Tighten, repair or replace cable- Check all switch settings
Sound directionless, bass weak	<ul style="list-style-type: none">- Speakers connected out of phase	<ul style="list-style-type: none">- Check connections making sure that cables are connected "+" to "+" and "-" to "-"
Loud hum or buzz on one or more channels	<ul style="list-style-type: none">- Poor ground connection in interconnect cabling	<ul style="list-style-type: none">- Check all connectors and repair as necessary

* If unit continues to blow fuses, have it serviced - - - DO NOT USE A HEAVIER FUSE!

Fig. 2



(a) A partial view of the rear panel of the AV6000/AV654 showing the various input and output connectors.
*Channel 6 not available on the AV5000



(b) This partial view, in reverse, of the AV6000/AV654 rear panel may help if you are attempting to locate a specific connector and must do so by reaching over the top of the amplifier from the front.

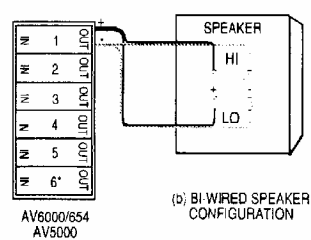
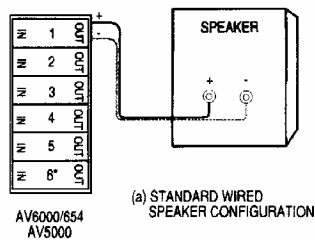
(The graphics have been reversed back to normal to make them easier to decipher.)

*Channel 6 not available on the AV5000

Fig. 3

The two configurations shown represent the most common forms of wiring the speaker.

Always double-check to make sure polarity is correct.

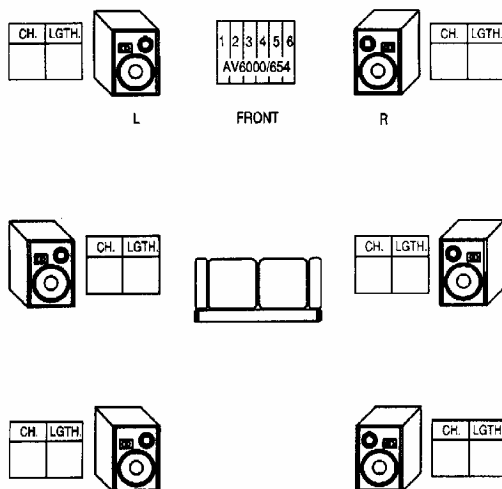


*Channel 6 not available on the AV5000

Fig. 4

A diagram showing a multichannel layout of up to 6 channels using the AV6000/654 as the main amplifier.

The Blocks adjacent to each speaker location can be used to enter information on how you have your system setup. There is also a listing point for source outputs in the event you are driving the amplifier from something other than a single, multi-channel (more than 2 channel) source.



INPUT CABLES		
CHANNEL	LGTH.	SOURCE

SPECIFICATION	AV6000	AV654	AV5000
Power Rating per Channel (r.m.s. into 8 Ω)	Channels 1 - 6: 100 W	Channels 1 - 6 60 W	Chans. 1 - 3: 100 W Chans. 4, 5: 60 W
Frequency Response (Hz)	5 - 45k	5 - 45k	5 - 45k
Input Sensitivity	1 v	775 mv	1 v / 775 mv
THD (% S+N @ 1 kHz)	0.09	0.09	0.09
Input Impedance (kΩ)	33.2	33.2	33.2
Damping Factor (@ 50 Hz)	200	100	100
Current (Amps, peak-peak)	28	14	28/14
Slew Rate (v/μsec)	14	14	14
Dynamic Headroom (dB)	1.4	1.4	1.4
S/N (dB, A-weighted)	95	95	95
Voltage Gain	28	28	28
Line Power, Fuse	120 VAC, 12A Slo Blo	120 VAC, 12A Slo Blo	120 VAC, 12A Slo Blo
Dimensions (W" x L" x H")	17 x 15-1/2 x 5-1/4	17 x 15-1/2 x 5-1/4	17 x 15-1/2 x 5-1/4
Weight (lbs./kg)	40/18.1	35/15.9	35/15.9

Specifications Subject To Change Without Notice.

Limited Warranty

B & K Components Ltd., referred to herein as B & K, warrants your B & K equipment against all defects in material and workmanship for a period of three years from date of purchase. This warranty applies only to the original purchaser and only to equipment in normal residential use and service. Defective equipment must be returned to B & K, prepaid, accompanied by sufficient payment to cover the cost of return shipping and handling, and will be repaired or replaced at the discretion of B & K whose decision as to the method of repair will be final.

This warranty shall not apply to any equipment which is found to have been improperly installed, incorrectly fused; misused, abused or subjected to harmful elements; used in any way not in accordance with instructions supplied with the unit; or to have been modified, repaired or altered in any way without the expressed, written consent of B & K.

No warranty, implied or otherwise created by State law shall extend beyond the term of this warranty and B & K shall not be liable for any incidental or consequential damage arising out of a defect in material or workmanship of the unit during the term of this warranty or thereafter. Some States do not allow the exclusion or limitation of incidental or consequential damages and the foregoing exclusions may not apply to you.

This warranty gives you specific legal rights. You may also have other rights which vary from State to State.

No agent, representative, dealer or employee of B & K has the authority to increase or alter the obligations or terms of this warranty.

B & K Components Ltd.

RETURNING EQUIPMENT

No equipment may be returned to B & K Components Ltd. without a RETURN AUTHORIZATION.

Should you find it necessary to return equipment to B & K, for any reason, a RETURN AUTHORIZATION (RA) number must be issued by B & K in respect of the equipment being returned. You may request an RA number by calling or FAXing B & K at the numbers below. We ask that you provide the following information at that time.

1. Your name and address
2. The model and serial number of the equipment being returned.
3. A description of the problem being experienced.

Your call will be referred to a Technical Service Representative who will work with you to resolve the problem. If it is determined that the unit must be returned for repair, an RA number will be issued.

Please Note: There are times when it may be necessary for the Technical Service Representative to return your call. Dedicated technical service hours are; Monday through Thursday (excluding holidays), 1:00 p.m. through 4:00 p.m. E.S.T.

B & K Components Ltd.
2100 Old Union Road, Buffalo NY 14227
☎ (716) 656-0026 **FAX** (716) 656-1291

LIST YOUR UNIT INFORMATION HERE

Model No.: _____
Serial No.: _____
Purchased at: _____
Date Purchased: _____



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